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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,943

06/26/2006

Pulickel Ajayan

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22428 7590 11/19/2009  
FOLEY AND LARDNER LLP  
SUITE 500  
3000 K STREET NW  
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EXAMINER

MOWLA, GOLAM

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/19/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/537,943	<b>Applicant(s)</b> AJAYAN ET AL.	
	<b>Examiner</b> GOLAM MOWLA	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-42 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-23, drawn to an organic photovoltaic conversion device.

Group II, claim(s) 24-40, drawn to a method of making an organic photovoltaic conversion device.

Group III, claim(s) 41-42, drawn to a method of generating electricity.

- The inventions listed as Groups I, II and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature among all the groups is the use of carbon nanotubes comprising defect sites. This element cannot be a special technical feature under PCT rule 13.2 because the element is shown in the prior art. WO 98/39250 to Smalley et al. (page 50, lines 14-30; page 30, line 18-page 33, line 20; page 35, line 1 - page 37, line 27) and US 5,084,365 A to Gratzel et al. (entire document) in combination teaches such element.

2. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Applicant needs to elect one species from A1-A2, one species from B1-B2, one species from C1-C2, one species from D1-D2, and one species from E1-E2.

Art Unit: 1795

- Species A1 which requires the device to be a solar cell ([0016] of Spec.);
- Species A2 which requires the device to be a photodetector ([0016] of Spec.);
- Species B1 which requires the defect site to comprise a carboxyl group ([0023] of Spec.);
- Species B2 which requires the defect site to comprise a C1-6 alkyl group ([0032] of Spec.);
- Species C1 which requires the organic dye to comprise PSF ([0022] and [0044] of Spec.);
- Species C2 which requires the organic dye to be Azo dyes ([0044] of Spec.);
- Species C3 which requires the organic dye to be phthalocyanine dyes ([0044] of Spec.);
- Species C4 which requires the organic dye to be quinine dyes ([0044] of Spec.);
- Species C5 which requires the organic dye to be quinoline dyes ([0044] of Spec.);
- Species C6 which requires the organic dye to be porphyrine dyes ([0044] of Spec.);
- Species C7 which requires the organic dye to be pyrylium dyes ([0044] of Spec.);

- Species C8 which requires the organic dye to be perylene dyes ([0044] of Spec.);
- Species D1 which requires the device to comprise a plurality of charge transporting layers ([0046] of Spec.);
- Species D2 which requires the device to comprise a single charge transporting layer ([0048] of Spec.);
- Species E1 which requires reacting the CNTs with an anionic initiator ([0029] of Spec.); and
- Species E2 which requires reacting the CNTs with an acid ([0023] of Spec.).

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

3. The claims are deemed to correspond to the species listed above in the following manner:

Art Unit: 1795

Species A1 which requires the device to be a solar cell ([0016] of Spec.); Species A2 which requires the device to be a photodetector ([0016] of Spec.); Species B1 which requires the defect site to comprise a carboxyl group ([0023] of Spec.); Species B2 which requires the defect site to comprise a C1-6 alkyl group ([0032] of Spec.); Species C1 which requires the organic dye to comprise PSF ([0022] and [0044] of Spec.); Species C2 which requires the organic dye to be Azo dyes ([0044] of Spec.); Species C3 which requires the organic dye to be phthalocyanine dyes ([0044] of Spec.); Species C4 which requires the organic dye to be quinine dyes ([0044] of Spec.); Species C5 which requires the organic dye to be quinoline dyes ([0044] of Spec.); Species C6 which requires the organic dye to be porphyrine dyes ([0044] of Spec.); Species C7 which requires the organic dye to be pyrylium dyes ([0044] of Spec.); Species C8 which requires the organic dye to be perylene dyes ([0044] of Spec.); Species D1 which requires the device to comprise a plurality of charge transporting layers ([0046] of Spec.); Species D2 which requires the device to comprise a single charge transporting layer ([0048] of Spec.); Species E1 which requires reacting the CNTs with an anionic initiator ([0029] of Spec.); and Species E2 which requires reacting the CNTs with an acid ([0023] of Spec.).

4. The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: the common technical feature among all the groups is the use of carbon nanotubes comprising defect sites. This element cannot be a special technical feature under PCT rule 13.2 because the element is shown in the prior art. WO 98/39250 to Smalley et al. (page 50, lines 14-30; page 30, line 18-page 33, line 20; page 35, line 1 - page 37, line 27) and US 5,084,365 A to Gratzel et al. (entire document) in combination teaches such element.

5. Due to the complexity of the restriction requirement, a telephone was not made to request oral election to above restriction requirement. See MPEP §812.01.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does

Art Unit: 1795

not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Correspondence/Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-F, 0900-1700 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JENNIFER KOLB-MICHENER can be reached on (571) 272-1424 until Dec 31, 2009, or ALEXA NECKEL can be reached on (571) 272-1446 from January 2009, onwards. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

Application/Control Number: 10/537,943

Page 7

Art Unit: 1795

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. M./

Examiner, Art Unit 1795

/Jennifer K. Michener/

Supervisory Patent Examiner, Art Unit 1795